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ABSTRACT

Cloze procedure, a testing method which systematically deletes words in written prose and then measures the accuracy of the information is reviewed from a historical viewpoint. Redundancy is placed in a verbal context and can be noted on three separate levels of language: (1) surface syntactic structure; (2) deep syntactic structure; and (3) semantic structure. Each level is said to contribute to an individual's ability to perform successfully with cloze materials. Cloze technique has been in use in psychology since 1897 when Hermann Ebbinghaus used it to explore the properties of memory. The Stanford-Binet Intelligence Test used closure principles, as did tests designed by Thorndike and Miller and Selfridge. Wilson Taylor presented an introduction to cloze technique in 1953, and Ellington (1981) developed a more eclectic approach to cloze procedures. Discrepancies in predicting the significance of the results of cloze tests have proven to be troublesome. The cloze technique may not be suitable for evaluating higher-order language skills. A correlation between cloze scores and multiple-choice scores has been established by Bormuth and factor validity for cloze tests as measures of comprehension ability have been tested. Other uses for cloze procedures include evaluating student writing and checking for plagarism. (LMO)

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CLOZE PROCEDURE

AN HISTORICAL REVIEW

by

David Wardell

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Close procedure, according to its traditional definition, is a testing method which systematically deletes words in written prose and then measures the accuracy of an informant in supplying those items which are missing. The ability of a test taker to replace these deletions springs from clues found in the natural redundancy of language and from a psychological tendency on the part of humans to complete patterns which have not been finished.

Bernard Spolsky, one researcher who has looked at the issue of language redundancy, has observed that natural communication is generally accompanied by sets of extraneous words, questions, or signals which assist our understanding. For example, face-to-face conversations during which visual as well as verbal cues are present are more conducive to understanding than conversations which take place over the telephone because the visual element is missing. At the same time, written messages are more likely to result in misunderstanding than telephone calls for all the subtleties of oral language (volume, tone, speed, and so forth) are absent. Spolsky states that while redundancy may seem wasteful of effort, "it is in fact of great use, for it reduces the possibility of error and permits communication where there is interference in the communication channel."[1]

Redundancy may be more easily understood by thinking about it in terms of verbal context. Language is not, after all, a random assemblage

of accidental sounds, but rather it is a pattern of interlocking elements that rely on one another for the production of meaning. Miller and Selfridge (1950) refer to verbal context as "the extent to which the choice of a particular word depends upon the words that precede it."[2] In other words, the linguistic environment sets up constraints within which the language producer must stay. If a speaker has produced: "Doctors want to...," the next word in the pattern is considerably limited. Lizard, destroyed, rainy, Kenneth and many other words are unlikely to appear immediately; the choice here is almost certainly a verb stem (e.g., increase, investigate, hypnotise, and so on). Miller and Selfridge's study, therefore, investigates the verbal context dependent probabilities of successive linguistic units. They describe a scale for what we call "meaningfulness." At one end of this scale are the random jumbles of symbols we customarily call nonsense, and at the other end are patterns of symbols that could easily appear in our daily discourse.[3] As one moves from the nonsense end of the scale toward the meaningful discourse end, contextual dependency increases. Notice how this occurs in the following examples:

(1) tourist big in yesterday

(2) tourist caught big salmon in river yesterday

(3) The tourist from Indiana caught a big Coho salmon in the Columbia River yesterday morning.

Redundancy can be noted on three separate levels of language. These levels are: (1) surface syntactic structure, (2) deep syntactic structure, and (3) semantic structure. Each of these levels contributes to a person's ability to perform successfully with cloze materials.

Surface redundancy occurs because many morphemes (i.e., minimal groups of sound which convey structural or lexical meaning) duplicate information that is recoverable from other parts of the utterance in which they appear. Bowers and Nacke (1971-72) note that "the structural morphemes, such as determiners (the, a, this, that), many conjunctions, expletive it and there and infinitival to are easily recoverable because they either categorise already known sets or they duplicate information already given by the non-structural words of a sentence."[4] These sentences illustrate surface redundancy:

(1) _____ president is _____ Republican.

(The president is a Republican.)

(2) _____ is _____ house _____ I used _____ live.

(There/It/This/That is the house where I used to live.)

Deep structure redundancy is more complex and must be examined as an extension of deletion processes as described by transformational-generative theory. This theory of language views an utterance as the end product of many operations (or transformations) which are grouped together as its underlying structure.

The standard procedure for illustrating the deep structure of language is to examine sentences which are ambiguous. The ambiguity arises because a single surface structure contains more than one deep structure. Either of these sentences can have two meanings:

Flying planes can be dangerous.

The shooting of the hunters was unfortunate.

In the first sentence, the speaker may be afraid that an airplane will crash into the house or the speaker may be afraid to take over the controls in the cockpit. The second sentences makes it unclear whether the hunters were wounded or others were victims. Each of these interpretations represents the underlying deep structures of these ambiguous sentences.

Once we acknowledge that a deep structure exists, the next step is to note that surface syntactic structure of sentences may be the same yet the deep syntactic structures are quite different. This is apparent in this pair of sentences:

Handling rattlesnakes can be dangerous.

Falling anvils can be dangerous.

In both cases, the surface syntactic structure is V -ing + N + AUX + V + Adj. When we examine them further, we find the deep syntactic structure is quite different. The first sentence is a kind of paraphrase: It can be dangerous to handle snakes. But the second sentence is not a paraphrase

because we cannot transform it in the same way. It makes no sense to say: It can be dangerous to fall anvils. The deep syntactic structures are different.

Another set of examples which illustrate this same principle can be seen in these sentences:

John is tough to satisfy.

John is anxious to satisfy.

The surface syntactic structure is: N + V + Adj + to + V. While this frame appears to be the same, it is significant to note that not all words can be substituted into this pattern. For example:

Linguistics is tough to teach.

*Linguistics is anxious to teach.

The differing deep structures preclude universal substitution into what appeared to be a single surface syntactic structure.

The native speaker of a language has an understanding of the ways in which these surface and deep syntactic structures operate. This knowledge of the linguistic principles of the language enables one to respond accurately to to this item:

_____ is anxious to teach.

Acceptable answers might be: She, The professor, or My assistant; it is unlikely that a native speaker would respond with the title of a course. At the same time, quite a different set of answers would be expected from the item: _____ is tough to teach.

Semantic redundancy occurs as the result of referential and relational features of words. Bowers and Nacke (1971-72) explain these features as "the meaning constituents of lexical words."[5] To illustrate this, they analyze the constituents of the words man, woman, bull, and cow.

man = + adult + human + male
woman = + adult + human - male
bull = + adult - human + male
cow = + adult - human - male

As Bowers and Nacke point out, this type of analysis seems to be intuitive in the native speaker. It explains, for example, "the native speaker's avoidance of certain collocations which he finds anomalous."[6] We would not expect to hear:

*Mary drank the sandwich.

*George broke some paper.

The oddness of these utterances arises from the combining of features which the native speaker does not consider compatible. Features which are compatible support a native speaker's intuition when certain semantic features are deleted. For example:

The moon revolves _____ the earth.

The most agreeable answer is probably around because of the semantic link this word has with "revolves."

An example of the way in which redundancy operates within a cloze environment has been designed by Bernard Spolsky:

> When for _____, every third _____ is left _____, it is _____ possible to _____. When it is every sixth _____, it is really so simple _____ you can read it as _____ all are there. But _____ second _____ is _____ difficult.[7]

Since Wilson Taylor's article about close procedure appeared in Journalism Quarterly in 1953,[8] considerable attention has been paid to this pedagogical method by those in the teaching profession. Cloze technique had, however, already enjoyed nearly fifty years of use in the field of psychology prior to Taylor's publication.

As early as 1897, a form of close procedure was used by the German psychologist Hermann Ebbinghaus while investigating the properties of memory. Ebbinghaus defined memory in its broadest sense by including retention, association, and reproduction as components of this mental process. The closure technique developed by Ebbinghaus was known as "Combinationmethode."[9]

> Ebbinghaus remained at Breslau until 1905. He was still susceptible to new ideas. In 1897 he published a new method for testing mental capacity in school-children, a study undertaken at the behest of the aldermen of Breslau, who came to him with an inquiry about the distribution of the

> hours of study of the school-children. The new method was what came to be called the "Ebbinghaus completion test," the method of testing that is utilized in a great many modern intelligence tests and scholastic aptitude tests. Binet had, of course, already begun his researches on the child mind, a fact which may account for Ebbinghaus' publishing a brief account of his work in French, but Binet's L'etude experimentale de l'intelligence did not appear until 1903. A claim can certainly be made that Ebbinghaus' originality penetrated the field of the higher processes not only in respect of memory but also in respect of intelligence as the mental tests came to test it.[10]

During the Breslau experiment, Ebbinghaus devised a set of exercises from a German translation of Swift's Gulliver's Travels. These exercises closely resembled what we today recognise as close tests. Ebbinghaus required the children in the school to restore deleted words from the text--not to measure language ability but to determine the degree of mental fatigue at different times of the day. He noted, however, that the test results had a high correlation with both age of his informants and their school performance.

Exactly how Ebbinghaus came to develop his "Combinationmethode" remains uncertain although Shakow (1930) has suggested that inspiration may have come from Lewis Carroll. The poem Jabberwocky has frequently been used to illustrate the way in which functional morphemes in English enable the reader to predict the logic of otherwise puzzling language.[11] Surface redundancy, as discussed above, is clearly significant here.

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Would it have been possible for Hermann Ebbinghaus to have encountered Carroll's Jabberwocky prior to 1897, the time of the Breslau experiment? The answer seems to be unequivocally certain.

Carroll wrote the first stanza of Jabberwocky as a parlor game while visiting his cousins in the late 1850's. The remainder of the poem was composed between April, 1859, and May, 1862. The first public printing of Alice in Wonderland in which Jabberwocky appeared took place in 1866. The book was released in its German translation in March, 1869, in Leipzig where Ebbinghaus was living at the time. Because the Wonderland books were international best sellers, there is every reason to believe that Ebbinghaus was familiar with them long before he began his work in Breslau.

Yet the connection between these two men may eventually be drawn much closer.

After having served two years in the German army, Ebbinghaus went on tour through France and England (1875 - 1878). Almost certainly a man with his scholarly background would have visited the great centers of learning while he was in England. It is interesting to speculate that Carroll and Ebbinghaus did encounter one another at Cambridge and that their discussion led to the early German cloze experimentations.

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During the first half of this century, the Stanford-Binet Intelligence Test developed items using closure principles. Within the Stanford-Binet design these were referred to as Minkus Completion and were prepared so that the omitted parts of the test items would always be a connecting word. "The idea is a clever one, for no other part of a complex or compound sentence is so crucial in the correct comprehension of the whole as the relational elements."[12] Examples of the Minkus Completion test items are:

One cannot always be a hero, _____ one can always be a man.

The streams are dry _____ there has been little rain.[13]

Whether or not these effectively measured intelligence as the test makers proposed is of no particular concern here even though there does seem to be a wealth of evidence to suggest that verbal skills using coordination and subordination are not especially valid measures of human intelligence. In any case, the Stanford-Binet tests were one step in the historical development of cloze procedure.

Thorndike (1942) as well as Miller and Selfridge (1950) were among the early behaviorists who investigated close as a testing technique. Their interest was, in part, stimulated by the quantitative measurement possibilities this technique offerred in the examination of verbal contexts. Their investigations attempted to demonstrate that "contextual dependencies extending over 5 or 6 words permit positive transfer, and that it is these familiar dependencies, rather than the meaning per se that facilitate meaning."[14] The role redundancy plays in effecting

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these dependencies through surface, deep structure, and semantic structures has been discussed earlier. The distinction between word meaning and word relationship is essential for understanding the worth of cloze procedure as a measuring instrument. The ability to predict missing words from a text goes beyond their lexical definitions and is more closely associated with grammatical relationships.

This difference may be more easily understood by considering some examples. Note that in each of these utterances, there is a single blank; the ability to predict the missing word is nearly the same yet there is a procedural difference:

(a) black, green, blue, red, _____

(b) She was _____ fast.

In (a) the word meaning alone provides the clue for the next word. Logic dictates that this is a series with the next item necessarily a color. Item (b) is far different because it offers an opportunity to analyse the nature and scope of this linguistic environment before deciding upon a choice. An informant might fill in the blank using very, awfully or always. On the other hand, note how drastically the meaning shifts if the choice is the word considered. It is this dynamics of context which Miller and Selfridge, in particular, were eager to measure using closure principles.

It should be mentioned in passing that the gestalt conception of context is quite different from the behaviorist conception. The former is much friendlier to both traditional and modern grammatical analysis.

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In sentence (b), for example, a gestaltist or a modern-day linguist would be inclined to see a radical shift in the implicit structure of the sentence, depending on whether very versus considered has been inserted in the blank. But a behaviorist would resist setting up such implicit "unobservable" analysis. For a behaviorist, contextual dependencies should reside in overt properties of the expression--words and word order, and in the statistical likelihood of any particular word being able to fit into any particular sequence of other words. For the behaviorist, this likelihood is frequently defined by what expressions have been actually observed to occur.

It was from this tradition that Wilson Taylor emerged in 1953 to present an introduction to close technique to educators. He began his introduction by acknowledging the debt close procedure has to gestalt psychology--a school of thought contributing to theories about the naturalness of form. The human mind has a tendency to organise and to form structures; it tends to connect disconnected units. "An open form tends to change toward a certain good form. When a form has assumed stable equilibrium, it has achieved closure. Thus a nearly circular series of dots may achieve closure by being perceived as a circle."[15] As we have noted above, this same tendency applies to language; the mind processes meaning even when parts of the message have been obscured.

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Taylor recognized that a sentence is made up of complex sub-patterns which fit together to transmit the message. He suggested that a close test should deal with contextually interrelated series of blanks rather than isolated instances such as we observed in the Minkus Completion items on the Stanford-Binet examinations. The "obligatory environments" of these earlier tests sought to identify specific linguistic competence skills of the learner, and this design is an aberration because real language does not operate this way. Comprehension of the context often extends far beyond the words in close proximity to the deletion. By moving to full texts with deletions throughout, Taylor produced a test design more nearly like the language events we normally encounter.

At the same time, Taylor pointed out several problem areas connected with cloze procedure: (1) scoring difficulties; (2) deletion frequencies and types of deletion; and (3) discrepancies in predicting significance of the result.

Those scoring cloze tests have always had to worry about what can be a correct replacement. The term "correct replacement" implies an underlying continuum of relative rightness ranging from a completely inappropriate word, through poor, medium and good synonyms, to the exact word which was deleted. Bormuth (1965) held that the best way to evalue responses to a cloze test was to accept only the exact match:

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> When cloze tests are used in readability studies as measures of the comprehension difficulties of passages, scores obtained by counting responses exactly matching the deleted words seem to yield the greatest amount of discrimination among passage difficulties.[16]

On the other hand, Ellington (1981) has argued that synonym scoring should be used rather than exact replacement scoring. This debate continues between the two camps making scoring of close tests a problem that remains to be settled.

The frequency of deletion and type of deletion have also troubled test makers who plan to use the cloze procedure. Is random deletion suitable or should one stay with the more convenient system of counting out every nth word? MacGinitie (1961) found that a regular system of deletion worked best. About five words on either side of the deletion were needed for accuracy in supplying the missing word. Bachman (1982) suggests that a modified cloze passage, using rationale deletions, is capable of measuring both syntactic and discourse level relationships within a text. The advantages of this technique may outweigh considerations of reduced redundancy which underlie random deletion procedures.

A more eclectic approach has been taken by Ellington (1981) who lists a number of areas that can be addressed by close procedures. Among these are (1) general context; (2) content; (3) process strategies; (4) specific phonic or morphemic elements; (5) relationships cued by function words, pronouns and pronoun referents; and (6) organisational

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patterns. Either random deletion or systematic deletion could be used to evaluate these various areas.

Discrepancies in predicting the significance of the results of cloze tests have proven to be troublesome. When using clozure as a tool for predicting the "readability" of passages using excerpts from James Boswell, Julian Huxley, Henry James, Erskine Caldwell, Gertrude Stein and James Joyce, Taylor (1953) found that Gertrude Stein appeared to be the most "readable." The simple surface level of her texts masks the fact that her meanings are regularly obfuscated and caught in a web of convoluted logic.

Perhaps the observation by Alderson (1979) that cloze tests are not suitable for evaluating higher-order language skills bears on this issue. Establishing the difference in readability between James Boswell and Erskine Caldwell is not a proper application of the cloze procedure. Determining whether a text has any "readability" may be something that cloze can do only so long as the degree of readability is not expected. Bormuth (1967) concurs and notes that now there is no frame of reference against which a cloze score can be interpreted. The readability researcher must make an individual determination about what the cloze test scores mean.

John R. Bormuth has been a leader in attempting to establish the validity of the results of cloze testing. He began by comparing scores on cloze tests with scores on multiple-choice tests.[17] If multiple-choice

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tests are reliable in measuring comprehension as Bormuth held, then it would be useful to establish a working correlation between close scores and multiple-choice scores.

> There are various ways to pose the question of test validity, and various ways to evaluate it. Most commonly, claims of test validity are supported by certain types of experimental evidence from studies conducted over a period of time. Studies conducted to validate...tests are commonly designed to demonstrate that...the test yields results which correlate highly with the results of some other tests or assessment procedures whose validity has presumably been independently established.[18]

Bormuth's research does establish this correlation between close scores and multiple-choice scores.

Later, Bormuth (1969) studied the factor validity of cloze tests as measures of comprehension ability by analyzing the principal components of the correlations among nine close tests and seven multiple-choice tests, each designed to measure a different comprehension skill. His results showed that close tests "seem to offer a valid, convenient, and completely objective method of constructing tests that can be used for measuring either the reading comprehension abilities of students or the comprehension difficulties of passages."[19]

Other possible uses for close procedure besides those suggested above have been identified. Kirschenmann (1980), for example, believes that close procedure may provide a useful avenue of analysis of student writing. Because the predictability in determining the missing words in a text increases in proportion to the text's readability, student papers could be evaluated objectively using closure principles. Student

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papers with low predictability scores would be evaluated as having a low readability quotient; those with higher scores would have higher readability quotients.

Buckingham (1984) observes that cloze procedure is a simple and straightforward way to determine whether a student's work has been plagiarized. A 300-word section from the student's work should be chosen and then mutilated by deleting words on a 1 to 5 ratio. The student is then asked to complete this passage. "Score the passage using an acceptable word replacement method. A student who cannot replace 70% of the blanks using this method is unlikely to have written the passage in the first place."[20]

If we acknowledge the contributions made by Lewis Carroll in inspiring the development of close procedure, the technique has a history of more than 100 years. Close has demonstrated its versatility by being used successfully both by psychologists and by educators. Certainly this is a technique future researchers can draw upon with confidence in their attempts to unravel the mysteries surrounding the way in which the human mind operates.

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Footnotes

1. Spolsky (1970), pp. 7-8.

2. Miller and Selfridge (1950), p. 177.

3. Ibid., p. 179.

4. Bowers and Nacke (1971-72), p. 23.

5. Ibid., p. 29.

6. Ibid.

7. Bernard Spolsky cited by E. Maloney, et. al., "A Validity Study of an Editing Close Proficiency Test for Students of English as a Second Language." ED 236 217.

8. W. Taylor, "Close Procedure: A New Tool for Measuring Readability," Journalism Quarterly, 30, 1953, pp. 415-33.

9. See H. Ebbinghaus' Memory: A Contribution to Experimental Psychology. This work was originally published in Leipsig in 1885 under the title: Uber das Gedachtnis.

10. Boring (1950), p. 390.

11. Note the power that the functional morphemes have in providing clues to the grammatical relationships of the text. This is especially evident when the content words are eliminated:

    'Twas _____, and the _____y _____s
    Did _____ and _____ in the _____:
    All _____y were the _____s,
    And the _____ _____s _____.

12. Terman and Merrill (1937), p. 271.

13. Ibid., p. 112.

14. Miller and Selfridge (1950), p. 184.

15. Boring (1942), p. 253.

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16. Bormuth (1965), p. 285.

17. Bormuth (1967).

18. Dieterich and Freeman (1979), pp. 5-6.

19. Borumuth (1969), p. 360.

20. T. Buchingham, "Close to the Truth," TESOL Newsletter, 18(6), December 1984, p. 6.

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Bibliography

Aitken, K.G., TESL Applications of the Cloze Procedure: An Annotated Bibliography. Paper presented for Vancouver Community College, 1975. (ED 109 922)

Alderson, J.C., "The Cloze Procedure and Proficiency in EFL," TESOL Quarterly, 13, 2 (June 1979), pp. 219-227.

Arnspiger, R.H., et. al., "Reading and Writing in Junior High School Unified Studies," Paper presented at Annual Meeting of the Association for Supervision and Curriculum Development, Washington, D.C., 1978. (ED 167 997)

Bachman, L., "Trait Structure of Cloze Test Scores," TESOL Quarterly, 16, 1 (March 1982), pp. 61-70.

Bamberg, B., "What Makes a Text Coherent?" College Composition and Communication, 34, 4 (December 1983), pp. 417-429.

Boring, E.G., "Hermann Ebbinghaus," A History of Experimental Psychology, 2nd ed. New York: Appleton-Century-Crofts, 1950, pp. 380-392.

Boring, E.G., The Physical Dimensions of Consciousness. New York: Dover Publications, 1933.

Boring, E.G., Sensation and Perception in the History of Experimental Psychology. New York: Appleton-Century-Crofts, 1942.

Bormuth, J., "Comparable Cloze and Multiple-Choice Comprehension Test Scores," Journal of Reading, 10, (February 1967), pp. 291-299.

Bormuth, J., "Comparisons Among Cloze Test Scoring Methods," Reading and Inquiry, ed. by J. Figurel. Proceedings of the International Reading Association, 10, 1965, pp. 283-286.

Bormuth, J., "Cloze Tests as Measures of Readability and Comprehension Ability," Doctoral dissertation, Indiana University, 1962. Dissertation Abstracts, 23, 1963, 4218-9.

Bormuth, J., "The Cloze Readability Procedure," Elementary English, 45, (April 1968), pp. 429-436.

BEST COPY AVAILABLE

Bormuth, J., "Factor Validity of Cloze Tests as Measure of Comprehension Ability," Reading Research Quarterly, 4, 3 (Spring 1969), pp. 358-365.

Bowers, F., and Nacke, P.L., "Close, Transformational Theory and Redundancy," Journal of Reading Behavior, 4, 1 (1971-72), pp. 20-33.

Boyce, M.W., A Comprehensive Bibliography of the Close Procedure. Paper prepared at the State College of Victoria, Toorak, Australia, 1974. (ED 099 830)

Boyce, M.W., A Comprehensive Bibliography of the Close Procedure - Part B. Paper prepared at the State College of Victoria, Toorak, Australia, 1976. (ED 127 580)

Breneman, B., "Reaction: The Close and the Composition Process." Paper presented at the Annual Meeting of NCTE, San Diego, California, November, 1975. (ED 117 699)

Britton, J., et. al., The Development of Writing Abilities (11-18). New York: Macmillan, 1975.

Brosnahan, I., and Neuleib, J., "The Cloze Test as a Measure of Writing Ability," Papers on Language Testing (RELC Occasional Papers #18), ed. by S. Read. Singapore: SEAMEO Regional Language Center, 1981.

Brown, R., "Grammatical Morphemes and the Modulation of Meaning," Selections from A First Language. Cambridge, Mass.: Harvard University Press, 1973, pp. 254-273.

Cambourne, B., "Some Psycholinguistic Dimensions of the Silent Reading Process--A Pilot Study." Paper presented at the Annual Meeting of the Australian Reading Conference, Melbourne, Australia, Auggust, 1977. (ED 165 087)

Carroll, J.B., et. al., An Investigation of Close Items in the Measurement of Achievement in Foreign Languages. Cambridge, Mass.: Harvard Lab for Research in Instruction, 1959. (ED 021 513)

Carroll, L., The Letters of Lewis Carroll, ed. by M.N. Cohen and R. Green. New York: Oxford University Press, 1979.

Carroll, L., The Diaries of Lewis Carroll, ed. by R. Green. New York: Oxford University Press, 1954.

BEST COPY AVAILABLE

Clifford, J., "Composing in Stages: The Effects of a Collaborative Pedagogy," Research in the Teaching of English, 15, (February 1981), pp. 37-54.

Cole, M., ed., The Selected Writings of A. R. Luria. New York: M.E. Sharpe, 1978.

Connolly, P.R., and Knabe, W.E., "Assessing Inter-group Differences in the Use of Language: A Method and a Case Study," Central States Speech Journal, 24, 1 (1973), pp. 43-47.

Darnell, D.K., "The Development of an English Language Proficiency Test of Foreign Students Using a Closentropy Procedure," A Report for the U.S. Department of Health, Eduction and Welfare. Boulder, Colorado: University of Colorado, 1968. (ED 024 039)

Darnell, D.K., "The Relation Between Sentence Order and Comprehension," Speech Monographs, 30, (1963), pp. 97-100.

Davis, K., "The Cloze Test as a Diagnostic Tool for Revision," Revising: New Essays for Teachers of Writing, ed. by R.A. Sudol. Urbana, Ill.: NCTE, 1982.

Dember, W.N., and Jenkins, J.J., "Human Learning and Remembering," General Psychology: Modeling Behavior and Experience. Englewood Cliffs, New Jersey: Prentice-Hall, 1970, pp. 387-399.

Ebbinghaus, H., Memory: A Contribution to Experimental Psychology, trans. by H.A. Ruger and C.E. Bussenius. New York: Dover, 1964.

Ellington, B., "The Close Procedure," Journal of Research and Development in Education, 14, (Summer 1981), pp. 94-96.

Emig, J., "The Relation of Thought and Language Implicit in Some Early American Rhetoric and Composition Texts," The Web of Meaning. Upper Montclair, New Jersey: Boynton/Cook, 1983, pp. 3-43.

Emig, J., "Writing as a Mode of Learning," The Web of Meaning. Upper Montclair, New Jersey: Boynton/Cook, 1983, pp. 123-131.

Evans, G., and Haastrup, K., "Experiments with Close Procedure," English Language Teaching Journal, 31, 1 (October 1976), pp. 35-41.

BEST COPY AVAILABLE

Fillenbaum, S., and Jones, L.V., "An Application of Cloze Technique to the Study of Aphasic Speech," Journal of Abnormal and Social Psychology, 65, (1962), pp. 183-189.

Garrod, S., and Sandford, A., "Interpreting Anaphoric Relations," Journal of Verbal Learning and Verbal Behavior, 16, (1977), pp. 77-90.

Graves, D.H., "Patterns of Child Control of the Writing Process," Donald Graves in Australia - 'Children Want to Write...,' ed. by R.D. Walshe. Roselle, New South Wales: Primary English Teaching Association, 1983, pp. 17-28. (ED 240 587)

Greenacre, P., Swift and Carroll: A Psychoanalytic Study of Two Lives. New York: International Universities Press, 1955.

Gundlach, R.A., How Children Learn to Write: Perspectives on Children's Writing for Educators and Parents. Washington, D.C.: National Institute of Education, 1982. (ED 241 950)

Hayes, M.P., "Practical Application of Reading Theory and Technique to Classroom Composition." Paper presented at the Annual Meeting of the Conference of College Compositon and Communication, Washington, D.C., March, 1980. (ED 186 905)

Herrnstein, R.J., and Boring, E.G., ed., A Source Book in the History of Psychology. Cambridge, Mass.: Harvard University Press, 1965.

Horning, A.S., "Redundancy in Second Language Instruction," TESL Talk, 14, 3 (Summer 1983), pp. 77-82).

Hothersall, D., "Hermann Ebbinghaus (1850-1909)," History of Psychology. New York: Random House, 1984, pp. 137-143.

Howes, D., and Osgood, C.H., "On the Combination of Associative Probabilities in Linguistic Contexts," American Journal of Psychology, 67, (1954), pp. 241-258.

Jongsma, E.A., Cloze Instruction Research: A Second Look. Newark, Delaware: International Reading Association, 1980.

Kirk, D.F., Charles Dodgson: Semeiotician. Gainesville, Florida: Univ. of Florida Press, 1963.

Krashen, S.D., Principles and Practices in Second Language Acquisition. New York: Pergamon, 1982.

Krashen, S.D., Second Language Acquisition and Second Language Learning. New York: Pergamon, 1981.

BEST COPY AVAILABLE

Kroll, B.M., and Schafer, J.C., "Error Analysis and the Teaching of Composition," Composing in a Second Language, ed. by. S. McKay. Rowley, Mass.: Newbury House, 1984, pp. 135-144.

Lugton, R.C., "Wittgenstein's Theories of Language," Occasional Papers of the American Language Institute, 1, 1 (1965-66). pp. 5-27.

Luria, A.R., Cognitive Development: Its Cultural and Social Foundations. Cambridge, Mass.: Harvard University Press, 1976.

Luria, A.R., Language and Cognition. New York: John Wiley and Sons, 1981.

Luria, A.R., The Making of Mind: A Personal Account of Soviet Psychology. Cambridge, Mass.: Harvard University Press, 1979.

MacGinitie, W., "Contextual Constraint in English Prose Paragraphs," Journal of Psychology, 51, (January 1961), pp. 121-130.

Maloney, E., et. al., "A Validity Study of an Editing Close Proficiency Test for Students of English as a Second Language." Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Quebec, April 11-15, 1983. (ED 236 217)

McKay, S., ed., Composing in a Second Language. Rowley, Mass.: Newbury House, 1984.

McKenna, M.C., and Robinson, R.D., An Introduction to the Close Procedure. Newark, Delaware: International Reading Association, 1980.

McKoon, G., "Organisation of Information in Text Memory," Journal of Verbal Learning and Verbal Behavior, 16, 2 (April 1977), pp. 247-260.

Miller, C.A., "Alternatives to Standardized Tests for the Assessment of Reading Performance in the Elementary School." Paper presented at Portland State University, Portland, Oregon, 1983.

Miller, G.A., and Friedman, E.A., "The Reconstruction of Mutilated English Texts," Information and Control, 1, (1957), pp. 38-55.

Miller, G.A., and Selfridge, J.A., "Verbal Context and the Recall of Meaningful Material," American Journal of Psychology, 63, 2 (April 1950), pp. 176-185.

BEST COPY AVAILABLE

Moskowiz, B.A., "The Acquisition of Language," Scientific American, 239, 5 (November 1978), pp. 92ff.

Nicol, M.A., and Miller, K.M., "Word Redundancy in Written English," Australian Journal of Psychology, 11, (June 1959), pp. 81-91.

Oller, J.W., "Scoring Methods and Difficulty Levels for Close Tests of Proficiency in English as a Second Language," Modern Language Journal, 56, (March 1972), pp. 151-157.

Oller, J.W., "Research with Cloze Procedure in Measuring the Proficiency of Non-Native Speakers of English: An Annotated Bibliography," CAL-ERIC/CLL Series on Languages and Linguistics #13. Arlington, Virginia: ERIC Clearinghouse on Languages and Linguistics, 1975. (ED 104 154)

Osgood, C.E., Lectures on Language Performance. New York: Springer-Verlag, 1980.

Osgood, C.E., et. al., The Measurement of Meaning. Chicago: University of Illinois Press, 1967.

Pack, A., "Cloze Testing and Procedure," TESL Reporter, 6, (1973), pp. 1-2.

Piaget, J., Language and Thought of the Child, trans. by M. Gabain. New York: Meridian Books, 1955.

Plato, Protagoras, ed. by C.C.W. Taylor. Oxford: Clarendon Press, 1976.

Raimes, A., "A Grammar for Composition: The Grammar of Coherence." Paper presented at 13th Annual TESOL Conference, Boston, 1979.

Rainsbury, R.C., "Some Thoughts on the Question of Written vs. Spoken Language," Occasional Papers of the American Language Institute, 2, 1 (1967), pp. 20-22.

Ramanauskas, S., "The Responsiveness of Close Readability Measures to Linguistic Variables Operating Over Segments of Text Longer than a Sentence," Reading Research Quarterly, 8, 1 (Fall 1972), pp. 72-91.

Rankin, E.F., Jr., "The Cloze Procedure--A Survey of Research," Yearbook of the Southwest Reading Conference, 14, (1964), pp. 133-48.

BEST COPY AVAILABLE

Riley, P.M., The Cloze Procedure - A Selected Annotated Bibliography. New Guinea: Papua New Guinea University, 1973. (ED 106 749)

Roback, A.A., "Ebbinghaus, H.: Pioneer in Memory," History of Psychology and Psychiatry. New York: Philosophical Library, 1969, pp. 82-83.

Robbins, P., An Approach to Composition Through Psychology. Cambridge, Mass.: Harvard University Press, 1929.

Rodgers, P.C., Jr., "Alexander Bain and the Rise of the Organic Paragraph," Quarterly Journal of Speech, 51, 4 (December 1965), pp. 399-408.

Sahakian, W.S., "Hermann Ebbinghaus," History of Psychology. Itasca, Illinois: F.E. Peacock Publishers, 1981, pp. 107-115.

Shakow, D., "Hermann Ebbinghaus," The American Journal of Psychology, 42, 4 (October 1930), pp. 504-518.

Shearer, N.A., "Alexander Bain and the Genesis of Paragraph Theory," Quarterly Journal of Speech, 58, 4 (December 1972), pp. 408-417.

Shuy, R., "A Holistic View of Language," Research in the Teaching of English, 15, (May 1981), pp. 101-112.

Smith, M.S., "A Note on 'Writing versus Speech,'" English Language Teaching Journal, 31, 1 (October 1976), pp. 17-19.

Smith, R.E., et. al., "Individual Differences in Abilities," Psychology: The Frontiers of Behavior, 2nd ed. New York: Harper and Row, 1982, p. 379.

Spolsky, B., "Reduced Redundancy as a Language Testing Tool," ERIC Research in Education, 1970. (ED 031 702)

Strong, W., "Inter-Sentence, Inter-Paragraph Cohesion: Sentence Combining in Action," Oregon English, 2, 1 (Spring 1980), pp. 6-7.

Stubbs, M., Language and Literacy: The Sociolinguistics of Reading and Writing. London: Routledge and Kegan Paul, 1980.

Sutherland, R.D., Language and Lewis Carroll. The Hague, Netherlands: Mouton and Co., 1970.

BEST COPY AVAILABLE

Tannenbaum, P.H., et. al, "Effects of Grammatical Information on Word Predictability," The Journal of Communication, 19, (1969), pp. 41-48.

Taylor, W., "Cloze Procedure: A New Tool for Measuring Readability," Journalism Quarterly, 30, (1953), pp. 415-433.

Terman, L.M., and Merrill, M.A., Measuring Intelligence: A Guide to the Administration of the New Revised Stanford-Binet Tests on Intelligence. Boston: Houghton Mifflin Co., 1937.

Thorndike, R.L., "Two Screening Tests of Verbal Intelligence," Journal of Applied Psychology, 26, 2 (April 1942), pp. 128- 135.

Tierney, R.J., and Mosenthal, J.H., "Cohesion and Textual Coherence," Research in the Teaching of English, 17, 3 (October 1983), pp. 215-229.

Tuinman, J.J., and Blanton, B.E., "The Cloze Procedure: Corollaries of a Search Hypothesis." Paper prepared for the School of Education, Indiana University, Bloomington, Indiana, 1971. (ED 047 913)

Vygotsky, L.S., Mind in Society: The Development of Higher Psychological Processes. Cambridge, Mass.: Harvard University Press, 1978.

Vygotsky, L.S., Thought and Language, trans. by E. Haufmann and G. Vaker. Cambridge, Mass.: MIT Press, 1962.

Weaver, W., Alice in Many Tongues. Madison: University of Wisconsin Press, 1964.

Weaver, W.W., and Bickley, A.C., "Some Differences in Encoding and Decoding Messages," Journal of the Reading Specialist, 7, (1967), pp. 18-19, 22-25.

Wilkins, D.A., Linguistics in Language Teaching. Cambridge, Mass.: MIT Press, 1972.

Woodworth, R.S., Experimental Psychology. New York: Holt, 1938.

Zusne, L.. "Ebbinghaus, Hermann," Names in the History of Psychology: A Biographical Sourcebook. New York: John Wiley and Son, 1975, pp. 182-183.

BEST COPY AVAILABLE